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ABSTRACT

A study examined the developmental nature of early literacy in relation to variations in task demands, general cognitive development, and socioeconomic background. Subjects (N=32) were placed in two groups of 16 suburban Chicago kindergarten students that were designated either low income group (LIG) or high income group (HIG). The subjects, interviewed separately between March and May, were involved in four tasks: (1) writing isolated words and writing words as constituents of sentences; (2) writing a story and then rereading it; (3) three Piagetian tasks--conservation of number, seriation, and classification; and (4) the Metropolitan Readiness Test (Level II). Analyses of results were based on detailed transcriptions of the taped interviews, with two trained raters independently scoring each subject's response on each task. Task differences arrayed themselves logically from the least difference in own name and some single word dictation to the greatest difference in writing connected discourse. The results of this study support the suggestion that literacy development follows a complex pattern, even though--overall--children do progress toward conventional writing. This research uncovered subtle variations in the early patterns of literacy behaviors among children of different income levels, and these differences could hold implications for instructional issues. (Bar graphs of results are included.) (AEW)

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How Johnny Can Write: Kindergarten Children's Uses of Emergent Writing Systems

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FRAMEWORK AND QUESTIONS

Over the past 10 years, we have begun to realize that children who are not yet writing conventionally nevertheless exhibit knowledge of features of written language (e.g., Applebee, 1977; Clay, 1975; Cook-Gumperz & Gumperz, 1981; Ferreiro & Teberosky, 1982; Goodman, 1980; Sulzby, 1981, 1983; Barnhart & Sulzby, 1984; Sulzby, 1985). The present study was designed from an emergent literacy perspective which assumes that children's not-yet-conventional literacy behaviors precede and develop into conventional literacy. Currently, we know very little about how refinement of this developmental process occurs, as well as how children's early strategies for making sense of written language are influenced by various cognitive and

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environmental factors. The purpose of the present study was an examination of the developmental nature of early literacy in relation to variations in task demands, general cognitive development, and socieconomic background.

The research questions which guided the present study were:

(1) What differences are there in levels of writing and rereading development across writing tasks between children from two income levels?

(2) What forms of writing do children use when asked to write isolated words, words as constituents of sentences, or a self-composed story?

(3) What does the young child consider necessary in order for his written production to remain stable?

(4) What is the relationship between children's writing development, general cognitive development, and school readiness?

METHOD AND DATA SOURCE

Subjects. Two kindergarten classrooms from a school district in a northwestern suburb of Chicago that differed in family income level were selected from 43 kindergartens with 25 teachers. All kindergartens followed the same district-goverened curriculum. Within this district, a classroom was selected from the lower end of yearly income levels ($10,000 - $25,000), and one was selected from the higher end ($50,000 +). The groups will be referred to here as the "Low Income Group" (LIG) and the "High Income Group" (HIG), respectively, with 16 subjects in each group. Permission slips were sent to all parents, with

agreement to participate reaching 81% in the Low Income Group, and 88% in the High Income Group. The mean age for subjects in both groups was 5 years, 5 months at the start of the study.

Tasks. Each subject was interviewed separately between March and May, and was involved in 4 tasks, each of which was tape recorded. Task 1 consisted of two parts: Writing of Isolated Words, and Writing Words as Constituents of Sentences. Following the general method and analysis scheme of Ferreiro and Teberosky (1982), all subjects were asked to write: (a) Their own name; (b) MOM; (c) DAD; (d) BEAR; (e) DUCK, and; (f) MY DOG EATS BONES. In addition to these items, they were also asked to write: (g) CATERPILLAR; (h) BETWEEN, and; (i) THE GIRL EATS A BANANA. Further, subjects' notions of text stability were examined by performing diverse modifications and transformations on their written productions.

Task 2 followed the method and analysis scheme used by Sulzby (1983), whereby all subjects were asked to write a story about how they learned to ride a big wheel/bicycle, and then to reread their story.

In Task 3, subjects were presented with three Piagetian tasks: Conservation of Number, Seriation, and Classification. Task 4 was the Metropolitan Readiness Test (Level II).

Analysis. Analyses were based on detailed transcriptions, with two trained raters independently scoring each subject's responses on each task.

RESULTS AND DISCUSSION

Level of Writing and Rereading Development

The first discussion of results concerns writing analyses that included a considerawtion of the graphic form of the writing, as well as subjects' rereading and metalinguistic responses to these forms. Figure 1 presents results that show significant differences in level of writing and rereading development between the two groups of subjects when they were asked to write their own name (χ^2 (1) = 4.27, $p < 0.05$), other isolated words (χ^2 (1) = 9.60, $p < 0.01$), and words as constituents of sentences (χ^2(1) = 13.58, $p < 0.01$). More subjects in the High Income Group held a concept of writing that represented a match with the adult conceptualization of alphabetic writing, while most subjects in the Low Income Group treated their written form as a "fixed string" without understanding the reasons behind the order of the letters..

Figure 2 shows that when these same subjects were asked to write and reread a story, subjects in the High Income Group again scored significantly higher than subjects in the Low Income Group (χ^2(1) = 22.44, $p < 0.001$).

Writing Forms

The second discussion of results concerns only the graphic forms of writing used by subjects in the different writing tasks. The graphic forms used by subjects included conventional spelling, invented spelling, patterned or random letter strings, letterlike units, scribble, and drawing.

Figure 3 presents a summary which compares the patterns of the number of subjects in each group using conventional and/or invented spelling across all of the writing tasks. If one just looks at the writing forms used by subjects, there were marked differences in the writing forms used across writing tasks. Further, when one compares the subjects in each group across writing tasks, there were small differences in writing forms used between groups when they were asked to write highly familiar words, increasing differences when asked to write words as constituents of sentences, and marked differences between groups when asked to write a story.

More specifically, when subjects were asked to write their own name, MOM, or DAD there were no differences between groups. All subjects in both groups used only conventional spelling to write their own names. When they wrote MOM or DAD, subjects in both groups predominantly still used conventional spelling, with some invented spelling. However, note should be made that while many subjects in the Low Income Group used conventional spelling to write MOM, far fewer did so when asked to write DAD.

In contrast to this pattern, when subjects were asked to write other isolated words, a different pattern of forms of writing was observed between the two groups. None of the subjects in either group used any conventional spelling to write BEAR, DUCK, CATERIPLLAR, or BETWEEN; however, significantly more subjects in the High Income Group used invented spelling to write these items when compared to subjects in the Low Income Group ($\chi^2(1) = 4.06$, $p < 0.05$). Further, the range of writing systems used to write these isolated words was wider in both

groups when compared to the writing forms used when they were asked to write their own name, MOM, or DAD. When asked to write these other isolated words, the writing systems ranged from invented spelling, to letter strings, and scribble, with subjects in the High Income Group clustering around invented spelling and subjects in the Low Income Group clustering around letter strings.

Figure 3 also shows that when subjects were asked to write words as constituents of sentences, subjects in neither group used conventional or invented spelling alone, but rather a mix of these two writing systems often appeared in response to this task. Overall across groups, there was a wide range of writing forms, ranging from a mix of conventional and invented spelling, to letter strings, and letterlike units. Significantly more subjects in the High Income Group used a mix of conventional and invented spelling when compared to subjects in the Low Income Group ($\chi^2(1) = 5.33$, $p < 0.05$). Again, subjects in the High Income Group clustered toward the higher level writing systems of conventional and invented spelling, and subjects in the Low Income Group clustered around the lower level systems such as letter strings.

Figure 3 shows that when subjects were asked to write a story, significantly more subjects in the High Income Group used a combination of conventional and invented spelling when compared to subjects in the Low Income Group ($\chi^2(1) = 7.73$, $p < 0.01$). Overall, the distribution of writing forms across subjects ranged from a mix of conventional oand invented spelling to scribble; however, the pattern within groups was consistent with

previously-observed patterns, with subjects in the Low Income Group predominantly using writing forms other than conventional and invented spelling.

A careful look at Figure 3 shows that when asked to write a story, the number of subjects in the Low Income Group using "other" writing systems was the same as when they were asked to write words as constituents of sentences. In otherwords, 15 of the 16 subjects in the Low Income Group used "other" writing forms when asked to write sentences, and 15 out of 16 of these subjects also used "other" writing forms when asked to write story. If one only compares the number of subjects in this group who used "other" writing forms on both of these tasks, this may initially suggest that there were no differences in writing forms between these two tasks among subjects in the Low Income Group. However, to terminate the analysis here would be extremely misleading. A careful look at the breakdown of the content of this "other" category for each of the two tasks shows two very different pictures. Figure 3 shows that the writing systems composing the "other" category in the sentence-writing task involved only the mixing of letter strings with other forms of writing. In contrast, Figure 3 also shows that in the storywriting task, not only did subject mix letter strings with other writing forms, but additionally they mixed forms of writing in combinations not used previously in writing words as constituents of sentences. Thus, there was a qualitative difference in the writing forms used by subjects in the Low Income Group across these two writing tasks. Further, no

subjects in either group used any drawing or scribble in writing words as constituents of sentences, but several did so in the storywriting task.

Modifications and Transformations

Although all subjects rejected modifications and transformations of their written productions, the argument for this rejection differed between groups. More specifically, significantly more subjects in the High Income Group tried to sound out the new written production of either their own name (χ^2 (1) = 4.49, $p < 0.05$) or other isolated words ($\chi^2(1) = 13.57$, $p < 0.0001$). Thus, the newly-created text was now different from the original, yet readable to subjects in the High Income Group. In contrast, responses of most subjects in the Low Income Group were based solely on the presence or absence of the required letters and their position. Few subjects in the Low Income Group attempted to sound out the newly-created productions.

Importantly, the results of the present study show that while a variety of writing forms were used, including conventional spelling, the nature of these surface manifestations was not always consistent with the subjects' underlying conceptualization of writing. Thus, some subjects who used conventional writing forms seemed to not yet hold a concept of alphabetic writing; rather, many of the conventionally-written strings appeared to function as "fixed forms" or "stable strings," per Ferreiro and Teberosky (1982).

Cognitive Tasks and Relationship to Other Tasks

Analysis showed no clear relationship between level of conceptualization of written language and level of cognitive operational activity. Thus, among subjects who scored at a high level on the writing tasks, some scored high and others low on the Piagetean tasks, with a similar pattern observed among those who showed lower level writing behaviors. Further, there were no significant relationships between subjects' performance on any of the three cognitive tasks. Additionally, there was no significant relationship between scores on the readiness test and performance on the cognitive tasks.

However, significant positive relationships were found between each of the writing tasks and the readiness test ($p < 0.05$). Importantly, significant positive relationships between pairs of all of the writing tasks were also reported ($p < 0.05$).

Summary and Conclusions

In summary then, we found overall task differences in young children's responding to being asked to write dictated words or sentences, or being asked to compose handwritten stories. As the demands of the writing tasks increased, the forms of writing appeared less mature. Also, group differences appeared greater. These task differences arrayed themselves logically from the least difference in own name and some single word dictation to the greatest difference in writing connected discourse. Moreover, the forms of writing systems also became more varied.

Ferreiro and Teberosky (1982) suggest that the developmental process of written language acquisition follows an orderly sequence whereby children construct hypotheses about the writing process that evolve qualitatively through a series of levels. However, they only examined children's writing attempts in response to tasks focusing on children's understanding of how the writing system represnts isolated words and words as constituents of sentences.

Consistent with previous research (Sulzby, 1981, 1983; Barnhart & Sulzby, 1984; Sulzby, & Teale, 1985), the results of the present study support the suggestion that literacy development may follow a more complex pattern, even though overall, children do progress toward conventional writing. Children may simultaneously hold multiple hypotheses at various levels of written language development, allowing them to draw out of a repertoire of knowledge about written language, depending on the demands of the task (Sulzby, 1983).

The present study has uncovered subtle variations in the early patterns of literacy behaviors among children of different income levels, and these differences potentially hold important implications for instructional issues. Children enter school knowing far more than we acknowledge in our instructional programs, and knowledge of developmental patterns is critical in order to appropriately design instruction and assess progress.

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FIGURE 1. LEVEL OF WRITING AND REREADING DEVELOPMENT

TASK 1A:
SUBJECTS' NAME AND OTHER ISOLATED WORDS

TASK 1B:
WORDS AS CONSTITUENTS OF SENTENCES

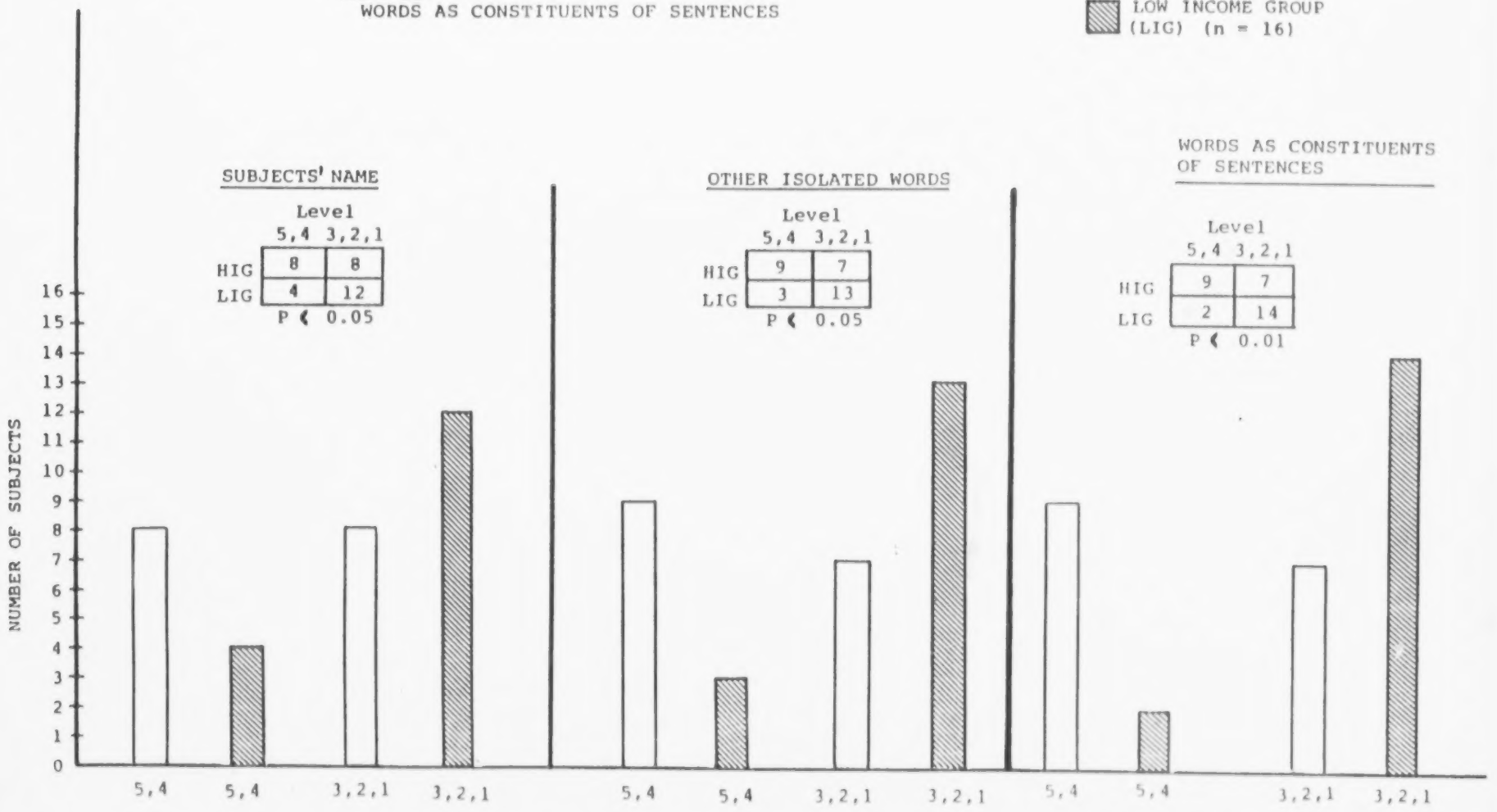
HIGH INCOME GROUP (HIG) (n = 16)
LOW INCOME GROUP (LIG) (n = 16)
SUBJECTS' NAME
Level
5,4 3,2,1
HIG 8 8
LIG 4 12
P < 0.05
OTHER ISOLATED WORDS
Level
5,4 3,2,1
HIG 9 7
LIG 3 13
P < 0.05
WORDS AS CONSTITUENTS OF SENTENCES
Level
5,4 3,2,1
HIG 9 7
LIG 2 14
P < 0.01
NUMBER OF SUBJECTS
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
5,4 5,4 3,2,1 3,2,1 5,4 5,4 3,2,1 3,2,1 5,4 5,4 3,2,1 3,2,1
LEVEL OF WRITING AND REREADING DEVELOPMENT

FIGURE 2. LEVEL OF WRITING AND REREADING DEVELOPMENT

TASK 2:
STORYWRITING

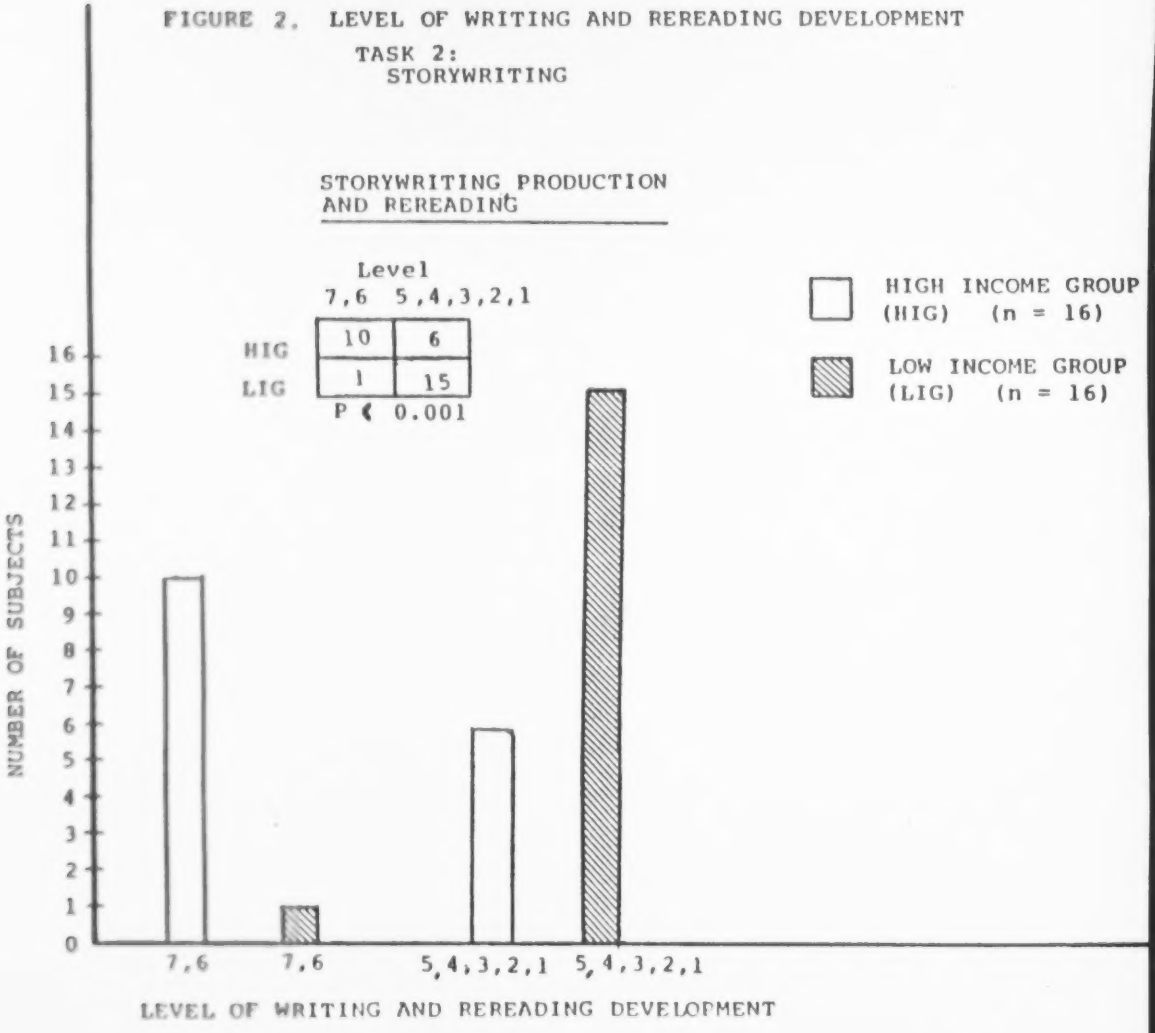
STORYWRITING PRODUCTION AND REREADING
Level
7,6 5,4,3,2,1
HIG 10 6
LIG 1 15
P < 0.001
HIGH INCOME GROUP (HIG) (n = 16)
LOW INCOME GROUP (LIG) (n = 16)
NUMBER OF SUBJECTS
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
7,6
7,6
5,4,3,2,1
5,4,3,2,1
LEVEL OF WRITING AND REREADING DEVELOPMENT

FIGURE 3. WRITING SYSTEM(S) ACROSS TASKS-
USE OF CONVENTIONAL, INVENTED SPELLING
AND/OR OTHER WRITNG SYSTEMS